Tfr-

The velocity for the original section was 20 m 50 per second; the ratio of these velocities is

$$\frac{20.50}{9.20}$$

which shows that the furnace will continue to function with a gas port area 2.2 times its original area.

This analysis is riecesssary to enable the designer to plan the lines of the furnace in such a manner that a long campaign will be assured.[1]

XI. METHODS OF COMPUTING FOR FURNACES OF VARIOUS TYPES

In this chapter it is proposed to supply a computation scheme which will be of service to engineers and technicians whose duties make it necessary for them to follow closely the working of reverberatory furnaces. All the data which are available at this time are based upon a small number of furnaces. For this reason it is impossible to confirm the absolute exactness of the coefficients which are presented.

The verification of these numerical constants is necessary in order to fix their limitations. Research should be undertaken by others, and the author will be glad to give the fullest recognition to those co-workers who desire to contribute to the improvement of furnace work and who will aid him in attaining that end.

The following order of procedure is suggested for use in making the computations and sketches for a furnace.

In designing a furnace, the first thing to do is to roughly outline the heating chamber. Within this outline should be indicated the direction of the gaseous currents and, consequently, the system upon which the furnace works.

For example, in the case of a brick kiln, the height will be fixed by the consistency of the unburned bricks,

which will limit the height to which they may be set, and the length and width (or diameter) will be fixed by the capacity of the kiln, or the number of bricks to be burned at one setting.

In the case of a furnace for the gradual or continuous heating of ingots, the dimensions of the hearth of the furnace will be

(1) An analysis of this character might show that expensive cooling device were neither desirable or necessary.